

## CLAIMS

What is claimed is:

1. A DC mitigation circuit, comprising:  
5 a control circuit for evaluating an amount of DC or harmonic current resulting from the DC in a transmission line; and  
switches for providing a current into a winding of a transformer, said switches being controlled by said control circuit,  
wherein said current provided to said winding generates a magnetic flux that  
10 offsets a flux created by said DC or harmonic current resulting from the DC in said transmission line.
2. The DC mitigation circuit of claim 1, wherein said switches are metal-oxide semiconductor field-effect transistors (MOSFETs).
- 15 3. The DC mitigation circuit of claim 1, wherein said DC mitigation circuit is connected to an output filter for filtering an output of said switches.
4. The DC mitigation circuit of claim 1, wherein said control circuit is  
20 connected to a primary winding of said transformer.
5. The DC mitigation circuit of claim 1, wherein said control circuit is connected to a secondary winding of said transformer.

6. The DC mitigation circuit of claim 1, wherein said control circuit is connected to a core of said transformer.

7. The DC mitigation circuit of claim 1, wherein said switches are connected  
5 to a tertiary winding of said transformer.

8. The DC mitigation circuit of claim 1, further comprising a capacitor for powering said switches.

10 9. The DC mitigation circuit of claim 8, further comprising diodes connected across said switches so as to charge said capacitor during a frequency cycle.

10. The DC mitigation circuit of claim 9, wherein said switches are MOSFETs and said diodes are connected across a source and drain of said MOSFET switches so as  
15 to carry current in an opposite direction from said MOSFET switches.

11. The DC mitigation circuit of claim 10, wherein said capacitor discharges during said frequency cycle so as to power said MOSFET switches.

20 12. The DC mitigation circuit of claim 1, wherein said switches are integrated gate bipolar transistors (IGBTs).

13. A method of performing DC mitigation, comprising the steps of:  
evaluating an amount of DC or harmonic current resulting from the DC in a  
transmission line; and  
providing a current into a winding of a transformer based on said evaluated  
5 amount of DC or harmonic currents resulting from the DC, said current generating a  
magnetic flux that offsets a flux created by said DC or harmonic currents resulting from  
the DC in said transmission line.
14. The method of claim 13, wherein said current supplied to said transformer  
10 winding is provided by an internal power supply.
15. The method of claim 14, wherein switches are used to control said current  
that is outputted from said power supply to said transformer winding.
- 15 16. The method of claim 15, further comprising the step of filtering said  
current output from said switches.
17. The method of claim 13, wherein said switches are metal-oxide  
semiconductor field-effect transistors (MOSFETs).  
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18. The method of claim 13, wherein said switches are integrated gate bipolar  
transistors (IGBTs).

19. A DC mitigation circuit, comprising:

means for evaluating an amount of DC or harmonic current resulting from the DC

in a transmission line; and

means for providing a current into a winding of a transformer, said means for

5 providing a current into said winding being controlled by said means for evaluating;

wherein said current provided to said winding generates a magnetic flux that

offsets a flux created by said DC or harmonic current resulting from the DC in said

transmission line.